CLAIMS

1. A lenticular lens sheet comprising:

a first lens array formed in an input surface;

a second lens array formed closer to a light output side than the first lens array, substantially orthogonal to the first lens array, and constituting an input side and an output side of a lens boundary with light transmitting material having different refractive index from each other; and

a self-aligned ambient light absorbing layer placed in a non-passing position of light having passed through the first lens array and the second lens array,

wherein a part from the first lens array to the self-aligned ambient light absorbing layer is a solid structure with light transmitting material.

2. The lenticular lens sheet of claim 1, wherein a light transmittance front plate is laminated in an output side of the self-aligned ambient light absorbing layer.

3. The lenticular lens sheet of claim 1, wherein the second lens array is composed of a plurality of lenses concave toward an input side, and the light transmitting material in the output side of the lens boundary of the

second lens array has a lower refractive index than the light transmitting material in the input side.

4. The lenticular lens sheet of claim 1, wherein the second lens array is composed of a plurality of lenses convex toward an input side, and the light transmitting material in the output side of the lens boundary of the second lens array has a higher refractive index than the light transmitting material in the input side.

5. The lenticular lens sheet of claim 1, wherein a lens pitch of the first lens array is two to ten times a lens pitch of the second lens array.

6. The lenticular lens sheet of claim 1, wherein the self-aligned ambient light absorbing layer is lattice-shaped.

7. The lenticular lens sheet of claim 1, wherein the self-aligned ambient light absorbing layer is stripe-shaped.

8. A rear projection screen comprising:

a Fresnel lens sheet narrowing down light output from a rear projection projector into a certain angle range;

a lenticular lens sheet of claim 1; and

a front plate placed in an output surface side of the

lenticular lens sheet.

9. A rear projection apparatus comprising:

a rear projection projector generating and outputting video light; and

a rear projection screen of claim 8 inputting the video light output from the rear projection projector.

10. A lenticular lens sheet comprising:

a first lens layer having a first lens array in an input surface;

a second lens layer having a second lens array substantially orthogonal to the first lens array in an output side boundary of the first lens layer and having a different refractive index from the first lens layer; and

a self-aligned ambient light absorbing layer placed on an output surface of the second lens layer and in a non-passing position of light having passed through the first lens layer and the second lens layer.

11. A lenticular lens sheet comprising:

a first lens layer having a first lens array;

a second lens layer having a second lens array substantially orthogonal to the first lens array;

a filled layer filled between the first lens layer and

the second lens layer and having a different refractive index from at least the second lens layer; and

a self-aligned ambient light absorbing layer placed in a non-passing position of light having passed through the first lens array and the second lens array.

12. A method of manufacturing a lenticular lens sheet including a first lens layer having a first lens array in an input surface, a second lens layer having a second lens array substantially orthogonal to the first lens array in an output side boundary of the first lens layer and having a different refractive index from the first lens layer, and a self-aligned ambient light absorbing layer on an output surface of the second lens layer and in a non-passing position of light having passed through the first lens layer and the second lens layer, the method comprising:

a step of forming the second lens layer; and

a step of forming the first lens layer on the second lens layer after forming the second lens layer.

13. The method of manufacturing a lenticular lens sheet of claim 12, further comprising a step of forming the self-aligned ambient light absorbing layer, wherein the step of forming the self-aligned ambient light absorbing layer comprises a step of forming a photosensitive material layer

in a light output surface side of the lenticular lens sheet; and a step of applying light from an input surface side of the lenticular lens sheet and forming a photosensitive part and a non-photosensitive part corresponding to a lens pattern on the photosensitive material layer, and a light-shielding pattern corresponding to the non-photosensitive part serves as the self-aligned ambient light absorbing layer.

14. The method of manufacturing a lenticular lens sheet of claim 13, wherein the photosensitive material layer is a photosensitive adhesive layer.

15. The method of manufacturing a lenticular lens sheet of claim 13, wherein

the photosensitive material layer is a photocurable composition layer composed of a first composition and a second composition having a lower surface free energy than the first composition, and

the method comprises:

a step of applying light to the photocurable composition layer from an input surface side of the lenticular lens sheet in a state where the photocurable composition layer is in contact with a medium with a lower surface free energy than the second composition to cure the photocurable composition layer located in a focus part of the

lenticular lens pattern,

a step of applying light to the photocurable composition layer from a side of the photocurable composition layer in a state where the photocurable composition layer is in contact with a medium with a higher surface free energy than the first composition to cure the photocurable composition layer located in a non-focus part different from the focus-part, and

a step of placing coloring material on the photocurable composition layer and forming a light-shielding pattern corresponding to the non-focus part.

16. A method of manufacturing a lenticular lens sheet including a first lens layer having a first lens array in an input surface, a second lens layer having a second lens array substantially orthogonal to the first lens array in an output side boundary of the first lens layer and having a different refractive index from the first lens layer, and a self-aligned ambient light absorbing layer on an output surface of the second lens layer and in a non-passing position of light having passed through the first lens layer and the second lens layer, the method comprising:

a step of forming shapes corresponding to the first lens array and the second lens array on the first lens layer; and

a step of forming the second lens layer on the first lens layer.

17. The method of manufacturing a lenticular lens sheet of claim 16, wherein

the step of forming shapes corresponding to the first lens array and the second lens array on the first lens layer comprises:

a step of forming the first lens array in the first lens layer, and

a step of forming the second lens array in the first lens layer.

18. The method of manufacturing a lenticular lens sheet of claim 16, further comprising a step of forming the self-aligned ambient light absorbing layer, wherein the step of forming the self-aligned ambient light absorbing layer comprises a step of forming a photosensitive material layer in a light output surface side of the lenticular lens sheet; and a step of applying light from an input surface side of the lenticular lens sheet and forming a photosensitive part and a non-photosensitive part corresponding to a lens pattern on the photosensitive material layer, and a light-shielding pattern corresponding to the non-photosensitive part serves as the self-aligned ambient light absorbing layer.

19. The method of manufacturing a lenticular lens sheet of claim 18, wherein the photosensitive material layer is a photosensitive adhesive layer.

20. The method of manufacturing a lenticular lens sheet of claim 18, wherein

the photosensitive material layer is a photocurable composition layer composed of a first composition and a second composition having a lower surface free energy than the first composition, and

the method comprises:

a step of applying light to the photocurable composition layer from an input surface side of the lenticular lens sheet in a state where the photocurable composition layer is in contact with a medium with a lower surface free energy than the second composition to cure the photocurable composition layer located in a focus part of the lenticular lens pattern,

a step of applying light to the photocurable composition layer from a side of the photocurable composition layer in a state where the photocurable composition layer is in contact with a medium with a higher surface free energy than the first composition to cure the photocurable composition layer located in a non-focus part different from the focus-part, and

a step of placing coloring material on the photocurable composition layer and forming a light-shielding pattern corresponding to the non-focus part.

21. A method of manufacturing a lenticular lens sheet, comprising:

a step of forming a first lens layer having a first lens array;

a step of forming a second lens layer having a second lens array substantially orthogonal to the first lens array;

a step of forming a filled layer having a different refractive index from the first lens layer between the first lens layer and the second lens layer; and

a step of forming a self-aligned ambient light absorbing layer in a non-passing position of light having passed through the first lens layer and the second lens layer.